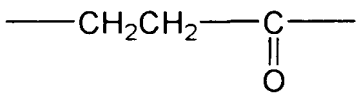
WHAT IS CLAIMED IS:

1. Polyketone fibers which comprise a polyketone containing a ketone unit represented by the following formula (1) as a main repeating unit, and have an intrinsic viscosity of not less than 0.5 dl/g, a crystal orientation of not less than 90%, a density of not less than 1.300 g/cm^3, an elastic modulus of not less than 200 cN/dtex, and a heat shrinkage of -1 to 3%:



...(1)

2. Polyketone fibers according to claim 1 which have a maximum heat shrinkage stress of 0.01-0.7 cN/dtex.

3. Polyketone fibers according to claim 1 which have a density of not less than 1.310 g/cm^3.

4. Polyketone fibers according to claim 1, wherein a sticking ratio of single filaments represented by the following formula is not more than 30%:

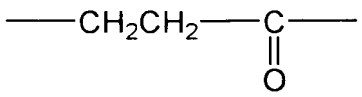
Sticking ratio of single filaments (%) = {1-(apparent number of single filaments/number of single filaments)} × 100.

5. Polyketone fibers according to claim 1 or 2, wherein a coefficient of dynamic friction between fiber-fiber is 0.01-3.0.

6. Polyketone fibers according to claim 5,

wherein 0.2-7% by weight of a finishing agent based on the fiber weight is applied to the surface of the fibers.

7. A polyketone solution which comprises a polyketone containing a ketone unit represented by the following formula (1) as a main repeating unit and having a molecular weight distribution of 1-6 and a Pd content of not more than 50 ppm and a solvent for dissolving the polyketone and which has a phase separation temperature in the range of 0-150°C:



...(1)

8. A polyketone solution according to claim 7, wherein the solvent for dissolving the polyketone is a solution containing at least one metal salt selected from the group consisting of zinc salts, calcium salts, lithium salts, thiocyanate salts, and iron salts.

9. A polyketone solution according to claim 8, wherein the concentration of the metal salt in the solution is 15-77% by weight.

10. A polyketone solution according to claim 8 or 9, wherein the solution contains 0.1-60% by weight of a salt which dissolves in an amount of not less than 1% by weight in water of 50°C in addition to the metal salt.

11. A polyketone solution according to claim 8, wherein the solution is an aqueous solution containing

zinc chloride and calcium chloride, the weight ratio of zinc chloride and calcium chloride is 29/71-44/56, and the total concentration of the metal salts of zinc chloride and calcium chloride is 58-64% by weight.

12. A polyketone solution according to claim 8, wherein the solution is an aqueous solution containing zinc chloride, calcium chloride and lithium chloride, the weight ratio of zinc chloride and the total of calcium chloride and lithium chloride is 29/71 - 44/56, the weight ratio of calcium chloride and lithium chloride is 49/51 - 91/9, and the total concentration of the metal salts of zinc chloride, calcium chloride and lithium chloride is 58-64% by weight.

13. A polyketone solution according to claim 8, wherein the solution is an aqueous solution containing zinc chloride, calcium chloride and calcium thiocyanate, the weight ratio of zinc chloride and the total of calcium chloride and calcium thiocyanate is 29/71 - 44/56, the weight ratio of calcium chloride and calcium thiocyanate is 76/24 - 99.5/0.5, and the total concentration of the metal salts of zinc chloride, calcium chloride and calcium thiocyanate is 58-64% by weight.

14. A polyketone solution according to claim 8, wherein the solution is an aqueous solution containing zinc chloride and calcium thiocyanate, the weight ratio of zinc chloride and calcium thiocyanate is 32/68 - 49/51, and the total concentration of the metal salts

of zinc chloride and calcium thiocyanate is 57-65% by weight.

15. A polyketone solution according to any one of claims 7-14, wherein the polyketone concentration is 1-40% by weight.

16. A process for producing polyketone fibers which comprises heating the polyketone solution of any one of claims 7-15 to a temperature higher than the phase separation temperature, then extruding the polyketone solution into a coagulating bath having a temperature lower than the phase separation temperature to form a fibrous material, thereafter removing a part or the whole of the solvent which dissolves the polyketone from the fibrous material, stretching the fibrous material and winding up the resulting fibrous material.

17. A process for producing polyketone fibers which comprises heating the polyketone solution of any one of claims 7-15 to a temperature higher than the phase separation temperature, then extruding the polyketone solution into a coagulating bath having a temperature lower than the phase separation temperature to form a fibrous material, thereafter drawing the fibrous material out of the coagulating bath at a coagulation draft of 0.2-2, successively drying the fibrous material at a drying draft of 0.5-1.5 after or while removing a part or the whole of the solvent which dissolves the polyketone from the fibrous material,

stretching the fibrous material and winding up the resulting fibrous material.

18. A process for producing polyketone fibers according to claim 16 or 17, wherein after completion of the stretching, the fibers are wound up at a tension of 0.005-0.5 cN/dtex.

19. A process for producing polyketone fibers according to claim 16 or 17, wherein the fibers obtained after stretching are wound up at a tension of 0.005-0.5 cN/dtex after or while heat treating the fibers at 100-280°C.

20. A twist yarn cord comprising the polyketone fibers of any one of claims 1-4 and having a twist coefficient K represented by the following formula in the range of 1000-30000:

$$K = Y \times D^{0.5}$$

in the above formula, Y denotes the number of twists per 1 m of the twist yarn cord (T/m), and D denotes a total fineness (dtex) of the twist yarn cord.

21. A treated cord of polyketone fibers which comprises the twist yarn cord of claim 20 to which a resorcin-formalin-latex resin is applied.

22. A fiber-reinforced composite material which contains the polyketone fibers of any one of claims 1-4.

23. A fiber-reinforced composite material according to claim 22 which is a tire, a belt or a building material.